Sensory sleep starts

Sleep starts, also known as hypnic jerks, hypnagogic jerks, and predormital myoclonus, are benign, physiological phenomena.[1–5] They usually present with motor manifestations of transient body jerks at onset of sleep, and are often triggered by fatigue, stress, and sleep deprivation.[1–5] Sensory manifestations have been well described as accompaniments of the movements.[1 4 5] To our knowledge, the only literature reference to sensory phenomena without a body jerk is an anecdotal comment within a review article.[5] We now report on two patients with purely sensory complaints restricted to onset of sleep.

Patient 1, a 42 year old college professor, had a 12 year history of 5–30 s spells occurring weekly to monthly. These episodes always occurred on falling asleep. She described mild, moderate, and severe spells as follows: mild=non-radiating electric shock-like sensation in the chest; moderate=mild plus a sense of suffocation; severe=moderate plus a poorly described medial right arm, ring, and little finger numbness. After the initial sensation, she is alerted and is then aware of the surroundings.

Patient 2, a 29 year old attorney had an eight year history of sleep onset spells lasting several minutes. These consisted of a focal itchy, sharp, pinprick-like sensation that may occur anywhere. The initial sensation awakens her and then the sensation shifts from one area to another for brief periods. There is no pattern to the location of the shifting. Scratching does not provide relief. The sensations may recur while attempting to fall asleep again. Episode frequency has increased from two to three times a year initially to once or twice a month. Changing skin care products, detergents, bedsheets, and clothing did not affect the episodes. The episodes occurred at home, as well as in other locations. Medical history was significant for migraine headaches without aura, not temporally related to the sleep onset episodes.

In both patients the spells occasionally occurred during periods of daytime sleep or drowsiness. Stress, fatigue, and sleep deprivation were often provoking factors. The sleep schedules were regular and sleep was otherwise undisturbed. Family histories were unremarkable and general physical, dermatological, and neurological examinations were normal. There was no history of recreational drug use. There was no associated tongue biting, urinary incontinence, or body movements noted at the time of initial medical evaluation. At follow up, however, patient 2 had noted a brief limb movement on two interim occasions after initial perception of the sensation. She thinks that these movements were a voluntary response to the itchiness during alerting.

The following studies were normal: patient 1, ECG, Holter monitor, brain MRI, several EEGs, a prolonged daytime sleep EEG, and polysomnography; patient 2, brain MRI.

The occurrence of sensory phenomena exclusively at onset of sleep should prompt a consideration of sensory sleep starts. The differential diagnosis includes nocturnal seizures, other parasomnias, hyperekplexia, restless legs syndrome, periodic limb movements in sleep, excessive fragmentary myoclonus, exploding head syndrome, and erroneous psychiatric diagnoses.[1–5] Recognition of this unusual predormital syndrome may eliminate unnecessary diagnostic testing and avoid unnecessary anticonvulsant therapy.

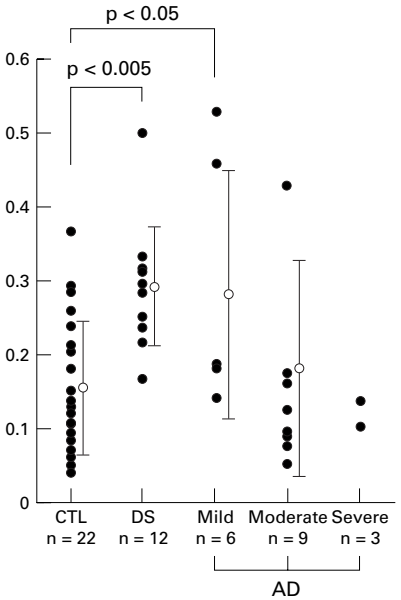
HOWARD W SANDER
HILDEGARDE GEISSE
CHRISTINE QUINTO
RAJESH SACHDEO
SUDHANSU CHOKROVERTY
Department of Neurology, Saint Vincents Hospital of New York, New York Medical College; and Robert Wood Johnson Medical School, NJ, USA

Correspondence to: Dr Howard W Sander, Department of Neurology, Saint Vincents Hospital and Medical Center of New York, Cronin 466, 153 West 11th Street, New York, NY 10011, USA. Telephone 001 212 604 7453

1 Broughton RJ. Parasomnias. In: Chokroverty S, ed. *Sleep disorders medicine: basic science, technical considerations, and clinical aspects*. Boston: Butterworth-Heinemann, 1994:381–99.
2 Mitchell SW. Some disorders of sleep. *Int J Med Sci* 1890;**100**:109–27.
3 Oswald I. Sudden bodily jerks on falling asleep. *Brain* 1959;**82**:92–103.
4 Gastaut H, Broughton R. A clinical and polygraphic study of episodic phenomena during sleep. *Recent Advances in Biological Psychiatry* 1964;**422**:197–221.
5 Mahowald MW, Schenck CH. NREM sleep parasomnias. *Neurol Clin* 1996;**14**:675–96.

High concentrations of PS-1 mRNA in skin fibroblasts of patients with Down's syndrome

The presenilin-1 (PS-1) gene was identified as one of the causative genes in early onset familial Alzheimer's disease and located on chromosome 14.[1] Recently, we found that the PS-1mRNA concentrations in skin fibroblasts of patients with mild Alzheimer's disease were significantly higher than those of controls.[2] Down's syndrome has lesions similar to those in Alzheimer's disease, and most patients with Down's syndrome develop dementia. To our knowledge, there are no reports on the expression of PS-1 mRNA in Down's syndrome. In this study, we used northern blot analysis to analyse the expression of PS-1 mRNA in cultured skin fibroblasts taken from living patients with Down's syndrome.



PS-1 mRNA to β-actin mRNA ratios in patients with Down's syndrome and patients with Alzheimer's disease with different severities of dementia. The relative ratios of density of PS-1 mRNA to β-actin mRNA in fibroblasts from the patients with Down's syndrome were significantly higher than those of the controls ($p<0.005$). Those from patients with a mild degree of dementia were significantly higher than those of the controls ($p<0.05$). However, the PS-1 mRNA to β-actin mRNA ratios in patients with Alzheimer's disease with moderate and severe dementia were not significantly different from controls.

The study population consisted of 12 patients with Down's syndrome (age 32.8 (SD 25.8); eight patients with dementia and four patients without dementia); 18 patients with sporadic Alzheimer's disease (age 57.5 (SD 24.5); six patients with mild, nine with moderate, and three with severe degrees of dementia) who had no mutation of APP, PS-1, and PS2 genes; and 22 neurological patients without dementia as controls (age 41.8 (SD 34.8)).

The diagnosis of dementia was based on interviews, internal medical findings, neurological examinations, cranical CT, general haematological tests, blood chemical tests, EEG, the mini mental state examination, Barthel index (daily activities), and surveillance of daily activities. Patients who carried trisomy on chromosome 21 were diagnosed as having Down's syndrome. Patients who satisfied the diagnostic criteria of the Down's syndrome M-III-R and NINCDS-ADRDA criteria and those scoring ⩽4 on Hachinski's ischaemic score were diagnosed as having Alzheimer's disease. The severity of disease was established according to the Down's syndrome M-III-R criteria of mild, moderate, or severe. Skin fibroblasts were prepared from the patients as follows. After the patient's and his or her family's consent had been obtained, skin fibroblasts were collected from the brachial skin, cultured, and incubated according to the method of Ohno *et al*.[3] Northern blot analysis was performed by the method of Goldberg.[4] We quantified the relative ratios of densities of PS-1 mRNA to β-actin mRNA using a densitometer. We evaluated differences between groups by the Mann-Whitney test, .

There was no significant association between PS-1 mRNA and age in CTL. The relative ratios of densities of PS-1 mRNA to β-actin mRNA in fibroblasts of patients with Down's syndrome were significantly higher than those of the controls (figure). However, there was no significant difference between these values for patients with moderate to severe dementia and those of the controls.

These findings suggest that the PS-1 gene may play an important part in the development of Alzheimer's disease in the early stages, and that PS-1 may also be closely associated with dementia in Down's syndrome. Although it is well known that patients with Down's syndrome carry trisomy on chromosome 21, the cause for the dementia in patients with Down's syndrome is unknown. We consider that both Alzheimer's disease and Down's syndrome may share the same mechanism, a high concentration of PS-1 mRNA leading to the development of dementia. Further studies are necessary to clarify the mechanisms relating to these high concentrations of PS-1 mRNA in Down's syndrome as well as in Alzheimer's disease.

KAZUYUKI IKEDA
KATSUYA URAKAMI
KENJI ISOE
KENJI NAKASHIMA
Division of Neurology, Institute of Neurological Sciences